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# 鞭叶蕨屬(*Cyrtomidictyum* Ching)——一个还不大被知道的中国产蕨屬*

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鞭叶蕨屬(*Cyrtomidictyum*)是我于1940年根据 *Aspidium lepidocaulon* Hooker 創立的。这个新屬的模式种最初發現于朝鮮的对馬島，以后在中国东部和中南部以及日本九洲等地都証明是常見的一种植物。在此以前，本新屬一直被認为一个单种屬，并且还沒有广泛地被世界植物学家所認識，例如美国科潑侖特氏(E. B. Copeland)在他1947年出版的蕨綱植物科屬志(Genera Filicum)一書里，連这个屬的名詞也沒有援引，这說明了他也不知这个屬的建立的。

在我近来研究中国耳蕨屬(*Polystichum*)的过程中，又發現了应該屬于鞭叶蕨屬的三个种，因为它們在形态特性上都和本屬的特征完全相符，这就使本屬現在有了四个組成的种了。为了对本屬的特征和同它有关的屬——特别是耳蕨屬的异同点得到进一步的認識，这里有必要重新提出如下的討論。

**Cyrtomidictyum** Ching in Bull. Fan Mem. Inst. Biol. Bot. Ser. 10:162. 1940.

*Aspidium* Hook. Sp. Fil. 4: 12 t. 217. 1862; Hook. & Bak. Syn. Fil. 250. 1873.

*Polystichum* J. Sm. Ferns Brit. & Fore. 286. 1866; Diels in Engl. u. Prantl: Nat. Pflanzenfam. 1: Ⅳ. 190. 1900; C. Chr. Ind. Fil. 582. 1905.

*Dryopteris* O. Ktze. Rev. Gen. Pl. 2: 813. 1891.

根状莖不甚粗大，短而直升，有疏鱗片；叶簇生，有長柄，披針形到寬矩圓披針形，一回羽状或下部羽状深裂，同形或亚二形，孢子叶和不育叶有明显的分功，前者的叶端羽状分裂，漸尖头，后者的叶端中軸延長成一無叶的鞭状匍伏莖，其頂端有一向地性的胞芽，着地生根，成一幼株，叶柄和中軸下面有很多寬卵形，漸尖头具長睫毛的同色宿存鱗片；小羽片或裂片自卵形急尖头到披針形漸尖头并多少为鐮形，全緣，決不具如耳蕨屬的尖鋸齿和刺头，叶为厚紙質到革質，干后呈棲色，上面光滑，下面被很多貼伏的無定形并具緣毛的薄鱗片，中肋存在，叶脈不明显，羽状、斜向上达于叶边，正常者分离，或者下部叶脈偶然結合，子囊群圓而小，不具盖，生于叶脈的背部，1—2列，位于中肋两边；孢

* 本文定稿后，复承鍾补求教授校正，特此致謝。

子两边形，有疣状突起或宽翅状的外孢壁。

本屬为中国东部和中南部特有的蕨屬，有四个相近的种，有一种自中国分布到日本九洲及朝鮮南部。

在外形上，本屬極像貫众屬（*Cyrtomium*）和耳蕨屬（*Polystichum*）的一些种，但其較小的生于叶脉背部的子囊群無盖，叶边全緣，叶端不具刺头，和其不育性的营养繁殖叶的端部以中肋延伸成一条很长無叶具鱗的鞭状匍伏茎，其頂端有一胞芽，着地生根，發育成幼株等点，很容易与那两屬区别。

的确，鞭叶蕨屬的这些特征也存在于耳蕨屬的一些种內，但都是孤立地存在着，而且發展的程度也較低，从未見所有这些特征联合一起同时存在于一个种內，也不見在耳蕨屬內其叶身表現着两型性而分功明显的征象，这一点在生物进化上是具有很大意义的。但应該指出，从子囊群的位置来看，鞭叶蕨屬又和耳蕨屬的一小群的种很相似（如 *P. lonchitis*, *P. nepalense*），这一事实可能指明鞭叶蕨屬是从这种类型的耳蕨种派生出来的，或者在系統进化上有过一定联系的。

从生态学的观点来看，鞭叶蕨屬与耳蕨屬在生存条件上也有着很大的不同。野外观察指出前者是喜温暖清凉潮湿低山生境的植物，而后者則是温带或者温暖带海拔很高而有着漫长严酷冬季的高山上的植物，因此，两屬的地理分布区和垂直分布是不同的。

中国——特别在西部和台灣高山区不仅是耳蕨屬在近代世界上的分布中心，而且也是在历史长期發展过程中，許多由耳蕨干（polystichoid stock）分化出来的蕨屬的基地，例如貫众屬、玉龙蕨屬(*Sorolepidium*)、拟貫众屬(*Cyrtogonellum*)、拟鱗毛蕨屬(*Microchlaena*)和鞭叶蕨屬等都是这样的例子。过去欧美学者們总是把这类的一些屬归并于鱗毛蕨屬（*Dryopteris*），另一些屬归到耳蕨屬里去，甚至如美国科潑命特氏更把主产于中国的貫众屬归并到南美洲产的 *Phanerophlebia* 屬里去，而沒有注意到这些相似的蕨群都是在不同的特定的地理条件下和历史發展的时期里从古老的耳蕨干演变而来的分支，如果把这些和其他由耳蕨干分化出来的在形态和生态上有着很大区别的小枝，仍然冻結于一个在組成上很不协調的耳蕨屬里面，則有机体的进化将成为抽象的东西，而从达尔文以来的一切进步的进化学說在發展科学的道路上，将不再是活的指导思想了。

## 种的檢索表

1. 叶为綫状披針形，寬达4厘米，孢子叶和不育叶頗相似，羽状深裂或羽状叶、羽片或裂片为矩圆卵形，急尖头或亚鈍头，长达2.5厘米
  2. 单叶或通常下部羽裂到中軸，裂片与中軸合生，基部上方不为耳形；产广东北江流域……………………………………………………1. 单叶鞭叶蕨(*C. basipinnatum*)

2. 叶下部羽状，羽片和中轴分离，基部上方为亚耳形，产江西西北部
…………………………………………………………………………2. 卵状鞭叶蕨(*C. conjunctum*)

1. 叶为寬矩圓披針形，寬超过 5.5 厘米，孢子叶和不育叶有显著的亚二型現象，均为羽叶，孢子叶的羽片为鐮状披針形，漸尖头，长逾 4 厘米
   2. 叶为厚紙質，孢子叶的羽片长6—10 厘米，寬 1.2—1.8 厘米或更寬，每組叶脉的基部上方一脉向外只达半途而止，子囊群在中肋两边为 2 列，或在基部上方耳片为 3 列…………………………………………………………3. 鞭叶蕨(*C. lepidocaulon*)
   2. 叶为革質，孢子叶的羽片长 4—5 厘米或罕較长，寬 0.8—1 厘米，每組叶脉的基部上方一脉如同其他叶脉一样向外达于叶边，子囊群在中肋两边为一列，或在基部上方耳片为 2 列…………………………………………………………4. 普陀鞭叶蕨(*C. Faberi*)

**1. 单叶鞭叶蕨**，新組合（圖版五十一）

**Cyrtomidictyum basipinnatum** (Baker) Ching, comb. nov.

*Aspidium basipinnatum* Baker in Journ. Bot. 1889: 176; Christ in Warburg, Mons. 77. 1900.

*Polystichum basipinnatum* Diels in Engl. u. Prantl: Nat. Pflanzenfam. 1: IV 189. 1900; C. Chr. Ind. Fil. 579. 1905.

根状莖短而直立，頂端密复棕色，卵形漸尖头，边具緣毛的大鱗片；叶簇生，柄細长，长 8—14厘米，被有同样的和張开的鱗片；孢子叶綫状披針形，长漸尖头，长 15—20 厘米，寬 2.5—3.5 厘米，下部羽裂达中軸，向上部羽裂較淺，裂片很多，接近，下部的为矩圓卵形，急尖头，全緣，长 1.2—1.4 厘米，寬 7 毫米，基部与中軸合生，上方不为耳形突起，叶身的頂部漸狹，全緣，叶質为亚革質，干后棕色，上面光滑，下面連叶軸被有鱗片；叶脉不显明，成羽状組合，都为二叉或少为三叉，向上方达于叶边；子囊群在中肋两边各为一列，中生。不育叶的叶身形态同孢子叶，通常羽裂較淺，有时为单叶状，中肋頂端延长成一無叶长鞭状匍伏莖，其端着地生出幼株。

广东：北江，香港植物园标本室 *103* 号(1888，模式标本)；西江，香港植物园标本室 *269* 号。(1890)；C. G. 馬修氏無号，1904，XI，4，与 1906，XI，23；翁源县，盖拉郝；分水山；刘心祈 *2640*，1933，X，30。

这个独特的蕨种到現在为止，只見于广东北部。貝格氏在他描述这个种的时候，曾与西印度产的 *Polystichum Plaschnickianum* (Kze.)和 *P. rhizophyllum* (Sw.) 相比。的确，在形体上頗相类似，但在主要的特征上就有屬性的差别了。

**2. 卵状鞭叶蕨**，新种。（圖版五十二）

**Cyrtomidictyum conjunctum** Ching, sp. nov.

*Polystichum conjunctum* Ching in herb.

根状莖短而直立，和叶柄都被有鱗片，叶簇生，柄长 15—20 厘米，鱗片大而棕色，卵状披針形，边有緣毛，宿存；叶身长 15—20 厘米或稍长，寬 4 厘米，披針形，向頂端为长

渐尖头，一回羽叶，羽片很多(約 20 对)，接近，开展，下部 5—7 对与中軸分离，其余均或多或少合生，基部一对和上方各对等长或稍长，基部下方斜形，上方呈耳形，边全緣，多少呈反折波状，叶質为亚革質，干后为棕色，上面光滑，下面被鱗片；叶脉不显明，每組 3—4 数，分离或下部有时結合，都向上达于叶边；子囊群小而圓，在中肋两側 1—2 列，無盖。

**江西**：西北部，宜丰县，黃崗山，熊曜国 *06466*, 1947, XI, 25, 生石山脚下，少見。

本种形体頗似前种，但叶为羽叶，下部 5—7 对羽片以短柄着生于中軸，基部上方为亚耳形，子囊群在中肋两側通常为 2 列，故易区别。

**3. 鞭叶蕨**(圖版五十三)

**Cyrtomidictyum lepidocaulon**(Hook.) Ching in Bull. Fan Mem. Inst. Biol. Bot. Ser. **10**: 162. 1940.

*Aspidium lepidocaulon* Hook. Sp. Fil. **4**: 12 t. 217. 1862; Hook. & Bak. Syn. Fil. 250. 1673; Fr. et Sav. Fl. Jap. **2**: 230. 1876; Palibin in Acta Hort. Bot. Petrop. **11**: 41. 1901.

*Polystichum lepidocaulon* J. Sm. Ferns Brit. & Fore. 286. 1866; Diels, l. c.; C. Chr. Ind. Fil. 582. 1905; Nakai, Fl. Kor. in Journ. Coll. Sci. Univ. Tokyo. **31**: 400. 1911; Ching, Pterid. Kiang. Province in Sinensia **3**: 331. 1933; Ogata, Ic. Fil. Jap. **5**: t. 246. 1933; Makino. Illust. Fl. Nip. 945 t. 2823, 1940; H. Ito, Fil. Jap. Illust. t. 317. 1944; DeVol, Ferns East. China 78. 1945 (pro parte).

*Dryopteris lepidocaula* O. Ktze. Rev. Gen. Pl. **2**: 813. 1891.

根状莖短而向上，被疏鱗片，叶簇生，亚二型，孢子叶的柄长 15—30 厘米，基部粗达 2.5 毫米，有丰富而大卵形的包着或亚瓦复状的軟質棕色，基部为心脏形的鱗片；叶身长同叶柄，寬 8—15 厘米。矩圓形到寬矩圓披針形，一回羽状，頂部为羽裂状的渐尖头，分离的羽片 8—15对，具短柄，或向上几不具柄，开展，长 6—15 厘米或稍短，寬 1.2—1.8厘米，基部一对等长或比上方的一对稍长，鐮状披針形，长渐尖头，全緣，基部不等形，下方斜切，上面为尖三角耳形突起，上面光滑，下面散生伏貼的薄質卵状披針状的边有长睫毛的鱗片，叶質为厚紙質，或亚革質，干后棕色，羽片中肋显明，上面稍凹陷，下面隆起；叶脉不显明，5—6数成組，每組的基部上方一脉向外止于中途，其他的都达叶边，照理分离，有时下部叶脉連結；子囊群圓而小，無盖，在中肋两边为不規則的 2—3 列。不育叶的柄远較高，叶身也較狹，羽片对数較少，形体也較小，彼此分离較远，中肋頂端延长成一無叶具鱗的鞭状匍伏莖，頂端生一胞芽为着地后行無性繁殖之用。

**江苏**：宜兴，龙池，秦仁昌，左景烈 *543*, 1928, V。

**安徽**：皖南，白嶽，鍾观光 1920, XI, 12；黃山，秦仁昌 *8920*, 1925, VII, 15。

**江西**：廬山，南麓，观音桥，周鶴昌 *400*，生陰湿沟中；C. 得伏氏 *1312*，潮湿处，1932, IX, 25；安邑，黃

楊山附近，蔣英 *10558*，1932，VIII，15；修水县，武功山，熊曜国 *05191*（1938）。

**湖南**：無地名，中山大学生物系 *25295*。

**福建**：西南部，連城县，冠独山，王大順 *810*；無地名，何景 *2088*。

**朝鮮**：对馬島，威尔福特氏 *565*（模式标本）1857，V.

**日本**：九洲东南部和中部。

从台灣方面，日本許多学者过去曾多次提出关于本种的报导，但从伊藤氏（Ito, Ic. pl. Form. t. 64, 1931）的照片和描述看，却不足以代表本种，而是下面的一种。因此，眞正的鞭叶蕨在台灣是否也有，就成了一个待考的問題了。

Var. **incisa** Ching, var. nov.

*Cyrtomium vittatum* Christ in Bull. Géogr. Bot. Mans 20: 5. 1910; Nakai, Fl. Kor. in Journ. Coll. Sci. Univ. Tokyo 31: 401. 1911 (non Christ 1902).

本变种不同于模式种的是：它的下部羽片长达10厘米，寬达2厘米，片状深裂，基部上方一个耳形裂片几分离，子囊群在中肋两側为多列。

**朝鮮**：Querlpart，大开氏 *2456*（**模式标本**），1808，X，28；另一由聖彼得堡植物园分贈标本 *110* 号。

**4. 普陀鞭叶蕨**，新組合。（圖版五十四）

**Cyrtomidictyum Faberi** (Baker) Ching, comb. nov.

*Nephrodium Faberi* Baker in Ann. Bot. 5: 318. 1891.

*Polystichum lepidocaulon* C. Chr. Ind. Fil. 582. 1905; Ito, Ic. Pl. Form. t. 64. 1931; DeVol, Ferns East. China 78. 1945(pro parte).

*Polystichum Faberi* Ching in herb.

在一般形体上，本种酷似前种，但較小，孢子叶全长15—35厘米，包括柄长10—20厘米，叶身长10—15厘米，寬5.5—10厘米，分离羽片5—7对，长4—5厘米，寬0.8—1厘米，鐮状披針形，基部上方也同样有耳状尖三角形突起，叶为革質，叶脉不显明，每組3—4条，都达于叶边；子囊群在中肋两側各为一列，仅在基部上方耳形突起处有时为2列，故易与前种区别。

**浙江**：宁波，普陀島，E. 法白氏 *205*（模式标本）；J. 格开脫氏，無号；福孛斯氏 *739*；H. 米果氏，無号，1936，VI，5；黃岩，王 N. T. 無号，1944，VIII，10；杭州，灵隐寺，秦仁昌無号，1919，溪流旁林下；馬利．馬修氏 *10218*（內中一部）；鎭海，鍾观光 *135*。

**台灣**：很常見。

从現在的分布看，本种在浙江沿海地带似为一个普通的蕨种，尤以普陀山为多，但在其他省份尚未發現。伊藤氏从台灣报导的鞭叶蕨按其照片和描述应为本种之誤。貝克氏在描述中，把本种和 *Nephrodium Dickinsii* (Fr. et Sav.) = *Dryopteris Dickinsii* 相比，似非無因，因二种在形体上頗相似，而与眞正鞭叶蕨显得較远异。

# CYRTOMIDICTYUM CHING, A YET LITTLE KNOWN CHINESE FERN GENUS

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As a genus, *Cyrtomidictyum* was proposed by me early in 1940 on the basis of *Aspidium lepidocaulon* Hooker, originally known from Tsu-Shima, Korea, and later found to be rather widely distributed in East and Central China, and also in the middle and the southeastern parts of Japan. It was then considered as a monotypic genus. Up to the present, the genus seems to remain still little known among fern students the world over, as examplified by the fact that the generic name was even not mentioned by E. B. Copeland in his valuable work, *Genera Filicum,* in 1947. In the course of my recent study of *Polystichum* of China, however, three additional species of the genus *Cyrtomidictyum* have been detected and they all conform exactly to the characteristics of the genus as was first pointed out over sixteen years ago.

As a distinct and natural genus derived from the great *polystichoid stock* so rich in species in China, *Cyrtomidictyum* Ching may once again be diagnosed as following:

CYRTOMIDICTYUM Ching, in Bull. Fan Mem. Inst. Biol. Bot. Ser. X, 162. 1940.

*Aspidium* Hook. Sp. Fil. IV, 12, t. 217. 1862, p. p.; Hook. et Bak. Syn. Fil. 250. 1873.

*Polystichum* J. Sm., Ferns Brit. & Fore 286 (1868); Diels in Engl. u. Prantl, Nat. Pflanzenfam. I, iv, 190. 1900; C. Christ. Ind. Fil. 582 (1905).

*Dryopteris* O. Kuntze, Rev. Gen. Pl. II, 813. 1891.

Rhizome rather small, short, ascending, sparsely scaly, Fronds tufted, long-stipitate, lanceolate to broadly oblong-lanceolate, simply pinnate or pinnatifid in the lower part, uniform or subdimorphous, in either case the soriferous ones always with pinnatifid, acuminate, co-adnate apical part, while the sterile ones in the same clump invariably with their apical part of rachis prolonging into a leafless long whip-like scaly stolon having a nodding tip provided with a scaly bud, which, upon reaching the ground, takes root and grows into a young plant, stipe and rachis beneath clothed copiously with broad, ovate, acuminate, long-fimbriate, concoloured and spreading scales; pinnae or segments ovate and acute to lanceolate and acu-

minate, more or less falcate, entire, never characteristically aristate-serrate and mucronate at apex as in *Polystichum*, texture thickly chartaceous to coriaceous, dry brown or brownish, underside copiously clothed with broad, amorphous, ciliate, thin and appressed scales, glabrous above, costa of pinnae present, veins obscure in pinnate groups, obliquely ascending, free or the lower veins of the same group or of the adjacent groups casually meet, as they run outwards; sori round, small, dorsal on veins, 1-2-seriate on each side of the costa of pinnae, exindusiate; spores bilateral, verrucose or with broad wing-like folding perispores.

A small genus of four closely related species endemic in East and Central China, extending eastwards to Taiwan (Formosa), Japan and Korea.

The genus appears to be very much like *Cyrtomium* Presl and *Polystichum* Schott, particularly those simply pinnate-leaved species as *P. lonchitis*, *P. nepalense* and *P. craspedosorum*, from which it differs in the rather smaller, exindusiate sori, dorsal on veins, in the pinnae being entire, and neither aristate-serrate at the margin nor tipped at apex with a spine, and in the vegetatively reproductive sterile fronds with an apex prolonging into a very long, whip-like leafless scaly stolon nodding and rooting at tip.

It is true that in *Polystichum* these outstanding diagnostic characters, which mark off *Cyrtomidictyum* as a natural genus, have also been found to exist, but they are met with only sporadically in one species or another and in a much lesser degree; never have they been seen to combine all into a single species, nor is there any known species of *Polystichum*, in which the dimorphism of sporophyte and consequently the division of functions, has developed to such an extent that, as a special means of vegetative reproduction, the sterile frond is so provided with a prolonged whip-like stolon as in *Cyrtomidictyum*. The exindusiate sori dorsal on veins common to all species is another deviation from *Polystichum*, although in a small group of polystichoid species *e. g.*, *P. lonchitis* (L.), *P. nepalense* (Don), the sori is also dorsal on veins. It is very likely that the present genus is derived from a similar type of *Polystichum*-species.

Besides the above-mentioned morphological differences, *Cyrtomidictyum* further differs from *Polystichum* in ecological aspects, and this is sharply reflected in their respective geographical and altitudinal distributions. As afore-stated, our genus is limited in its range within a comparatively smaller area in southeastern Asia, being much more restricted than the latter genus. Altitudinally, the field observation has shown that *Cyrtomidictyum*, being in preference of a much warmer climate, has habitually been encountered in cool sheltered environments in low hilly countries, where no *Polystichum*-species has as yet been found to exist; instead, the latter is

used to grow at higher elevations, where the climate is much colder and is marked by a long severe winter. In other words, *Polystichum* is primarily a temperate genus, while *Cyrtomidictyum* is one well infused with a warm temperate colouring.

China, particularly her western part and the mountains of Taiwan, is found to be not only the center of distribution for the species of *Polystichum* in modern times, as will be seen in my forthcoming paper on the genus, but is likewise rich in genera, seemingly having been derived all from the great polystichoid stock, including such genera as *Cyrtomium* Presl, *Sorolepidium* Christ, *Cyrtogonellum* Ching, *Microchlaena* Ching and the present genus, *Cyrtomidictyum.* All these seem to have in the course of evolution advanced far and distant enough to deserve generic rank quite separable from their mother stock, *Polystichum,* but, strange to say, of these, some are wrongly considered by Copeland in his *Genera Filicum* as *Polystichum,* others as *Dryopteris,* while *Cyrtomium,* so distinct as a genus, has even been considered by him as congeneric with the Tropical American *Phanerophlebia* Presl, although he has rightly——and I am glad——maintained the genus *Cyclopeltis,* also of polystichoid affinity, as distinct.

### *Key to the species*

1. Fronds linear-lanceolate, to 4 cm broad, both the fertile and the sterile ones quite alike, pinnatifid or pinnate, pinnae or segments oblong-ovate, acute or obtusish at apex, to 2.5 cm long.
   2. Lamina simple or usually pinnatifid down to the rachis in the lower part, with adnate segments which are not auriculated at the anterior side of the base, plants from northern kwangtung··························1. *C. basipinnatum*
   2. Lamina pinnate in the lower part, pinnae free, base subauriculate on the anterior side, plants from north-western Kiangsi··················2. *C. conjuntum*
1. Fronds broadly oblong-lanceolate, over 5.5 cm broad, the fertile and the sterile ones obviously subdimorphous, pinnate, pinnae of the fertile fronds lanceolate-falcate, acuminate, generally over 4 cm long.
   2. Fronds thickly chartaceous, the pinnae of fertile frond 6-10 cm long, 1.2-1.8 cm broad, the anterior basal vein of each group stops short halfway to the margin, sori 2-seriate on each side of costa of pinnae, or 3-deriate in the auricle·························································································3. *C. lepidocaulon*
   2. Fronds coriaceous, pinnae of the fertile frond 4-5 cm long, or rarely longer, 0.8-1 cm broad, the anterior basal vein of each group also reachs the margin as all the others, sori uniseriate and medial on each side of the costa of pinnae, or sometimes biseriate in the auricle··························4. *C. Faberi*

**1. Cyrtomidictyum basipinnatum** (Baker) Ching, comb. nov. (Pl. LI.)

*Aspidium basipinnatum* Baker in Journ. Bot. **1889**: 176; Christ in warburg,

Mons, 77. 1900.

*Polystichum basipinnatum* Diels in Engl. u. Prantl: Nat. Pflanzenfam. 1:Ⅳ.189. 1900; C. Chr. Ind. Fil. 579.1905.

*Rhizome* short, erect, clothed at the growing tip with dense, large, brown, ovate, acuminate, fimbriate *scales; fronds* tufted, stipe slender, 8-14 cm long, copiously clothed with similar spreading scales, fertile lamina linear-lanceolte, gradually acuminate, 15-20 cm long, 2.5-3.5 cm broad, pinnatifid in the lower part down to rachis and to a broad wing along the rachis upwards; *segments* numerous, contiguous, the lower ones oblong-ovate, acute, entire, 1.2-1.4 cm long, 7 mm broad, base adnate to rachis, the upper side not auriculate, the apical part of the lamina gradually tappering and entire; *texture* subcoriaceous, dry brown, glabrous above, scaly over the surface and rachis beneath; *veins* in segments obscure, in pinnate groups, all bifurcate or rarely trifurcate and ascendingly reach the margin; *sori* medial and uniseriate on each side of the costa. The sterile lamina similar to the fertile ones, usually less deeply pinnatifid or sometimes simple, rachis lengthened out into a long whip-like nodding stolon and viviparous at the apex.

**Kwangtung:** North River, Herb. Bot. Gard. Hongkong *No. 103* (1888, type); North-west River, Herb. Bot. Gard. Hongkong *No. 269* (1890); *C. G. Matthew*, Jan. 4. 1904, and Nov. 23. 1906; *Gerlach*; Wang Yuen District, Fan Shiu Shan, *S. K. Lau 2640*, Oct. 7-30, 1933.

A very distinct endemic species. Baker compared it with west Indian *Polystichum Plaschnickianum* (Kze.) and *P. rhizophyllum* (Sw.), which both are somewhat similar in general appearance to the Chinese species, but from them both ours differs in many other essential characteristics by which the genus is distinguished from *Polystichum.*

2. **Cyrtomidictyum conjunctum** Ching, sp. nov. (Pl. LII)

*Polystichum conjunctum* Ching in herb.

Species configuration *C. basipinnati* (Baker) Ching proxime affinis, frondibus pinnatis, pinnis inferioribus 5-7-paribus liberis, basi antice leviter auriculatis diversa.

*Rhizomate* breve, erecto, ut stipes dense paleaceo; *frondibus* caespitosis, stipite 15-20 cm longo, paleis brunneis, magnis, ovato-acuminatis, margine ciliato-fimbriatis persistentibus dense obtecto, lamina 15-20 cm longa vel longiora, 4 cm lata, lanceolata, versus apicem longe acuminata, simpliciter pinnata; *pinnis* numerosis (ca. 20-jugis), contiguis, patentibus, inferioribus 5-7-jugis liberis, ceteris adnatis, infimis inferioribus aequilongibus, vel interdum longioribus, 2-2.3 cm longis, ca. 1 cm latis, ovato-oblongis, acutis, basi postice obliquis, antice paullo auriculatis, margine in-

tegribus vel plus minusve repando-undulatis; *textura* subcoriacea, colore in sicco brunnea, facie inferne paleacea, superne glabra; *venis* occultis, liberis vel interdum conjunctis, 3-4, simplicibus, omnibus marginem attingentibus; *soris* parvis, rotundatis, inter costam et marginem univel in basi anteriore biseriatim positis, exindusiatis.

**Kiangsi:** North-western part, I-fang Hsien, Hwang-Kan Shan. *Hsiung Yao-Ko 06466* (type), Oct. 25, 1947, rare, at the foot of cliffs.

3. **Cyrtomidictyum lepidocaulon** (Hook.) Ching in Bull. Fan Mem. Inst. Biol. Bot. Ser. **10**: 162. 1940. (Pl. LIII)

*Aspidium lepidocaulon* Hook. sp. Fil. **4**: 12 t. 217. 1862; Hook. & Bak. Syn. Fil. 250. 1673; Fr. et Sav. Fl. Jap. **2**: 230. 1876; Palibin in Acta Hort. Bot. Petrop. **11**: 41. 1901.

*Polystichum lepidocaulon* J. Sm. Ferns Brit. & Fore. 286. 1866; Diels, l. c.; C. Chr. Ind. Fil. 582. 1905; Nakai, Fl. Kor. in Journ. Coll. Sci. Univ. Tokyo **31**:400. 1911; Ching, Pterid. Kiang. Province in Sinensia **3**: 331. 1933; Ogata, Ic. Fil. Jap. **5**: t. 246. 1933; Makino. Illust. Fl. Nip. 945 t. 2863, 1940; H. Ito, Fil. Jap. Illust. t. 317. 1944; Devol, Ferns East. China 78. 1945 (pro parte).

*Dryopteris lepidocaula* O. Ktze. Rev. Gen. Pl. **2**: 813. 1891.

*Rhizome* short, ascending, sparsely scaly; *fronds* tufted, subdimorphous, stipe of fertile fronds 15–30 cm long, about 2.5 mm across above the base, copiously clothed with large, ovate, clasping or subimbricate, concolored, 'soft' brown scales with cordate base, lamina as long as stipe, 8-15 cm broad, oblong to broadly oblong-lanceolate, simply pinnate under the pinnatifid, coadnate apex; free *pinnae* 8-15 pairs, short-petiolate, or subsessile upwards, patent, alternate, basal ones as long as those next above or rarely somewhat longer, usually 5.5-10 cm long, 1.2-1.8 cm broad, lanceolate-falcate, gradually acuminate, entire throughout, base unequal, oblique below, with a triangular auricle above, under surface with scattered, appressed, thin, fimbriate scales, glabrous above; *texture* thickly chartaceous or subcoriaceous, dry brown, costa of pinnae slender, grooved above and raised beneath; *veins* obscure, 5-6, in pinnate groups, of which the anterior basal one stops short halfway to the margin, occasionally the lower ones of the same group on the some side, or of the adjacent groups join, otherwise all free; *sori* round, small, dorsal on the lower 2-3 veins of each group, exindusiate, 2-seriate on each side of the costa, or 3-seriate in the auricle. The sterile fronds on much more slender and longer scaly stipes, lamina much narrower, usually consisting of fewer pairs of smaller pinnae, which are far apart from each other, the rachis prolongating into a long whip-like stolon, ended in a scaly bud as a means of vegetative reproduction.

**Kiangsu:** I-shing, Lung-chi, *R. C. Ching & C. L. Tso 543*, May, 1928.

**Anwhei** (southern part): Pei-yo, *K. K. Tsoong*, 12/11/9; Hwang-Shan, *R. C. Ching 8920* (1925).

**Kiangsi:** Lu-shan, southern slope, Kwei-in-chao, *H. C. Cheo 400*, in shaded ravines; *C. Devol 1312* in damp place, Sept. 25, 1932; Anyi, near Houng-yang Shan, *Y. Tsiang 10558*, Aug. 15, 1932; Wou-Kong shan, *Hsiung Yao-Ko 05191* (1938).

**Hunan:** Dept. Biol. Sunyatshan Univ. *No.25295*.

**Fukien:** Southwest, Lien-chen, Kwai To Shan, *Wang Da-ren 810*; without exact loc., *Hoo Ching 2088*.

**Korea:** Tsu-shima, *Wilford 565* (type), May, 1857.

**Japan:** Middle and south-eastern parts.

From Taiwan *Polystichum lepidocaulon* has been reported by all Japanese botanists. However, the Taiwan plant as photographed and described by Ito (Ic. Pl. Form. t. 64) appears quite typical of *Nephrodium Faberi* Baker, which has hitherto been considered the same as *Aspidium lepidocaulon* Hook. Whether true *Cyrtomidictyum lepidocaulon* (Hook.) also grows in Taiwan remains to be proved.

This is the largest species of the genus and also of the widest range of distribution.

Var. **incisa** Ching, var. nov.

*Cyrtomium vittatum* Christ in Bull. Geogr. Bot Mans. **20**: 5.1910; Nakai, Fl. Kor. in Journ. Coll. Sci. Univ. Tokyo **31**:501. 1911 (non Christ 1902).

A typo differt pinnis inferioribus ad 10 cm longis, crenato-incisis, basi anteriore uno lobo fere libero praeditis, soris multiseriatis.

Korea: Querlpart, *Taquet 2456*(type), Oct. 28, 1808; also specimens ex Hort. Bot. Petrop. *No. 110*.

Differs from the typical form in the lower lateral pinnae to 10 cm long, 2 cm broad near the base, lobato-incised with the anterior basal lobe almost free and multiseriate sori.

4. **Cyrtomidictyum Faberi** (Baker) Ching, comb. nov. (Pl. LIV)

*Nephrodium Faberi* Baker in Ann. Bot. **5**: 318. 1891.

*Polystichum lepidocaulon* C. Chr. Ind. Fil. 582. 1905; Ito, Ic. Pl. Form. t. 64. 1931; Devol, Ferns East. China 78. 1945(pro parte).

*Polystichum Faberi* Ching in herb.

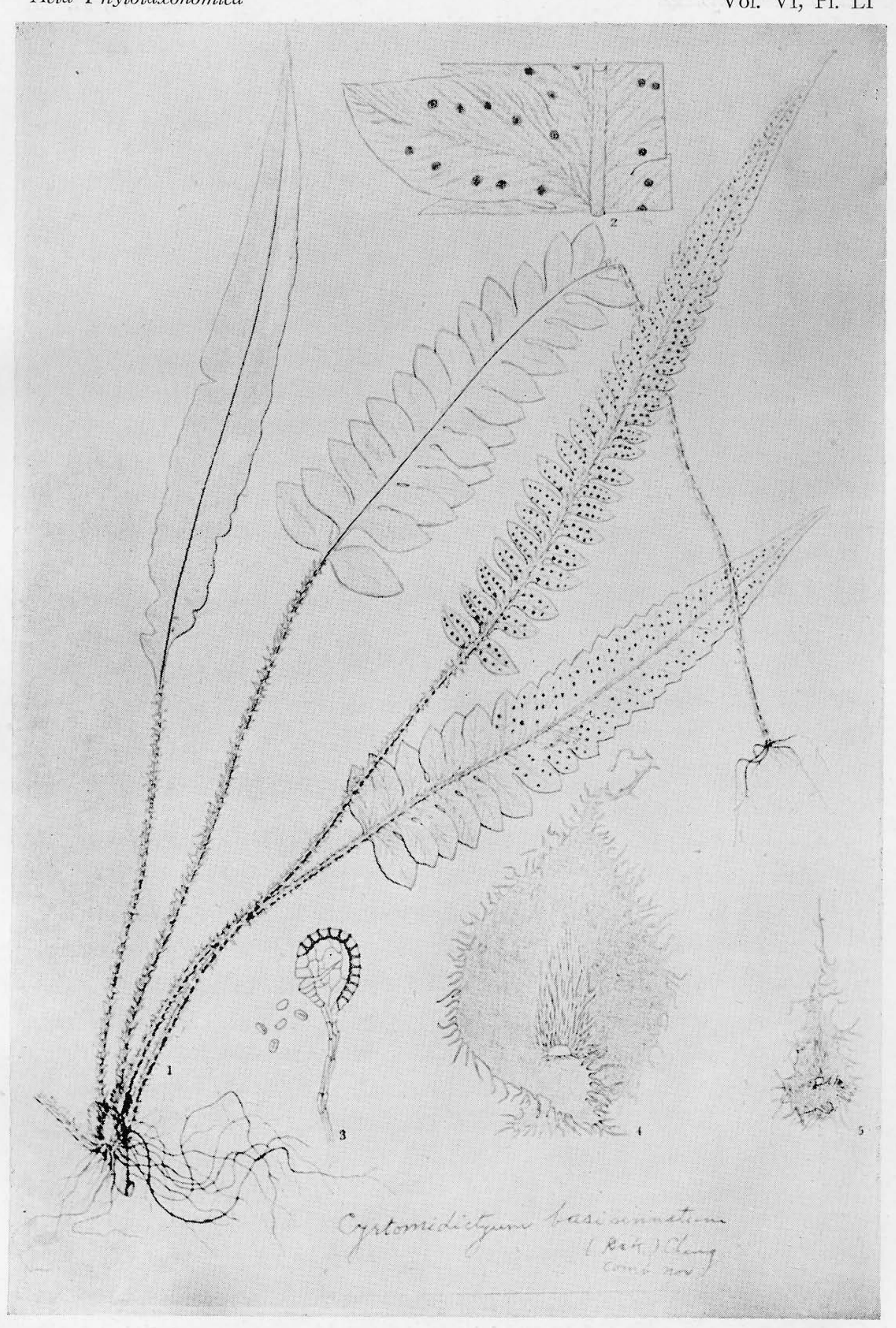
Similar to the preceeding species in general appearance, differs in smaller size, *fertile frond* 15-35 cm long including stipe 10-20 cm long, lamina 10-15 cm long, 5.5-10 cm broad, free *pinnae* 5-7 pairs, 4-5 cm long, 0.8-1 cm broad, lanceolate-falcate, also with a triangular auricle on the anterior side of the bae,

*texture* coriaceous, *veins* obscure, 3-4 in each group, all reaching the margin; *sori* uniseriate and medial on each side of the costa, dorsal on the anterior vein of each group only, occasionally biseriate in the auricle.

**Chekiang:** Ningpo, Insula Puto, *E. Faber 205* (type); *J. Guckett*; *Forbes 739*; *H. Migo*, June 5, 1936; Whangyen, *N. T. Wang*, Aug. 10, 1944; Hangchow, Linyin Monastery, *R. C. Ching* (1919), by stream side under woods; *Mary S. Matthew 10218* (pro parte); Cheng-hai, *K. K. Tsoong 135*.

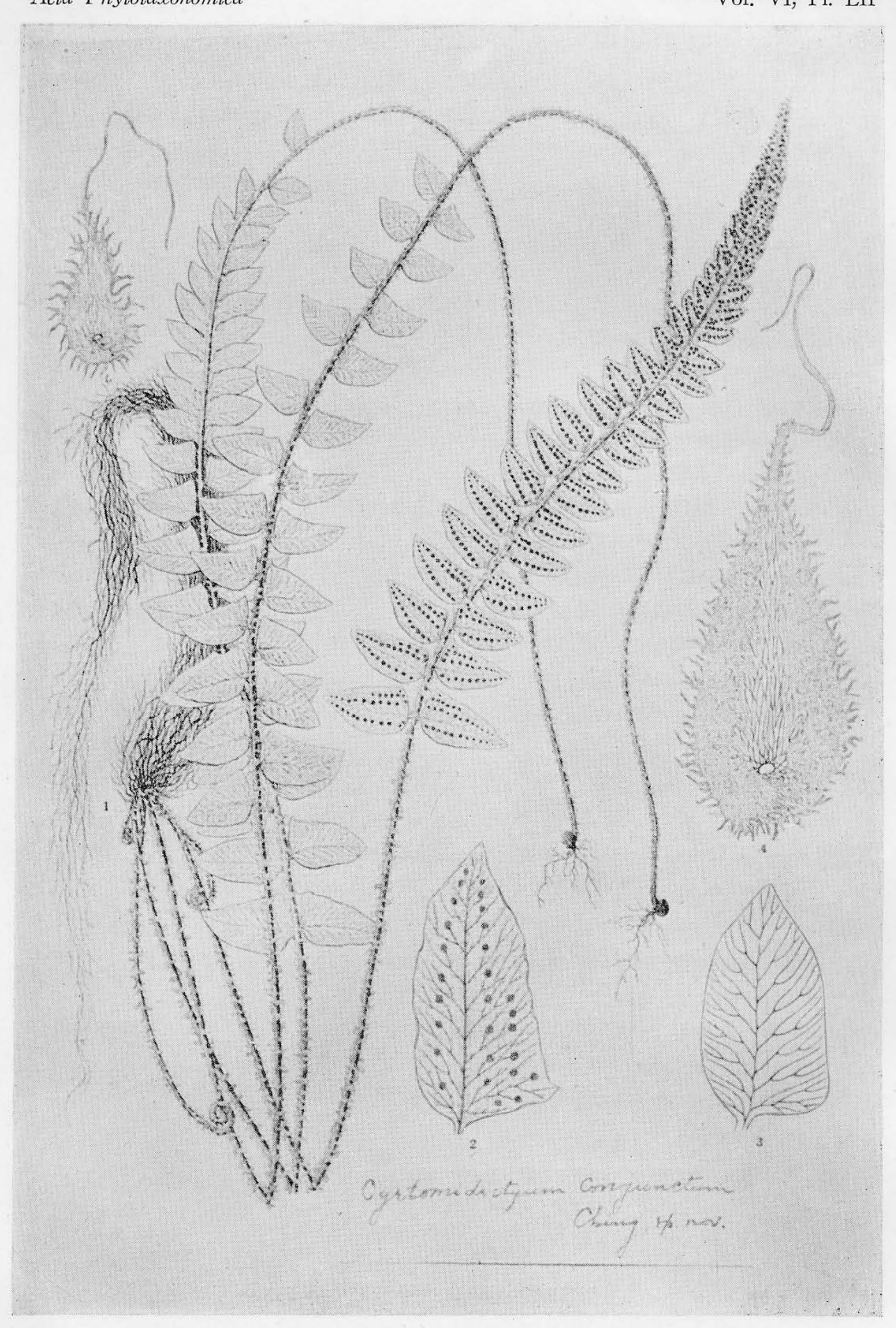
Also **Taiwan.**

By the present-day distribution, this species, which appears quite like the preceeding one, with which it has been lumped together by authors in the past, seems to be confined to the coastal part of the Province of Chekiang, where it is quite a common fern in shaded damp ravines in the low hills. The Taiwan plant as photographed and described by Ito matchs quite well the type from the Island Puto off the coast of Chekiang. Baker did not err very much, when he compared his species with *Nephrodium Dickinsii* (Fr. et. Sav.), to which our fern looks quite similar in general habit.



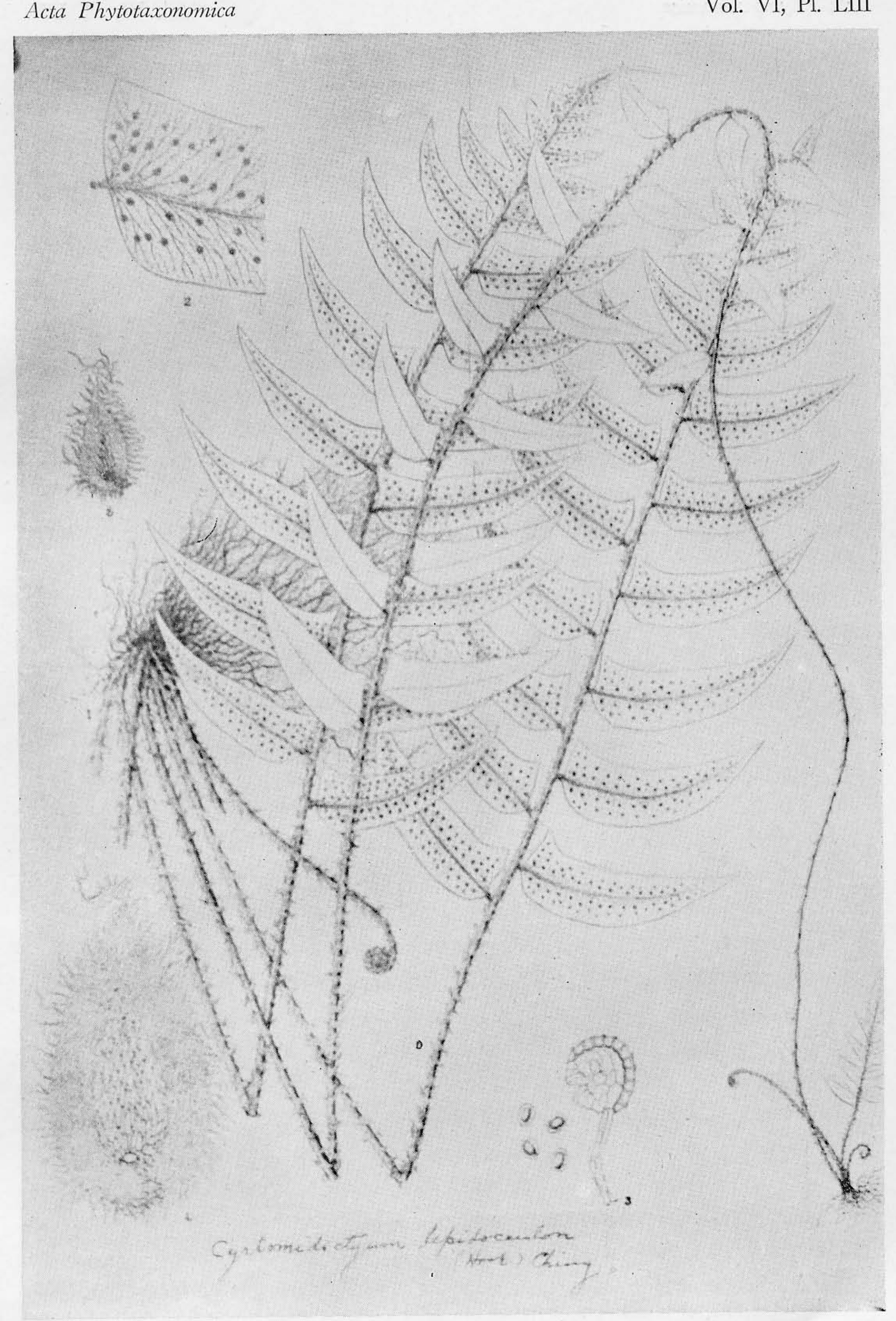

***Cyrtomidictyum basipinnatum***(Bak.) Ching, comb. nov.

1. 植物体全形 × $\frac{1}{2}$; 2. 裂片的一部，表示叶脉和子囊群 × $1\frac{1}{2}$; 3. 子囊和孢子 × 50; 4. 叶柄上的鳞片 × 20; 5. 叶背上的鳞片 × 20。



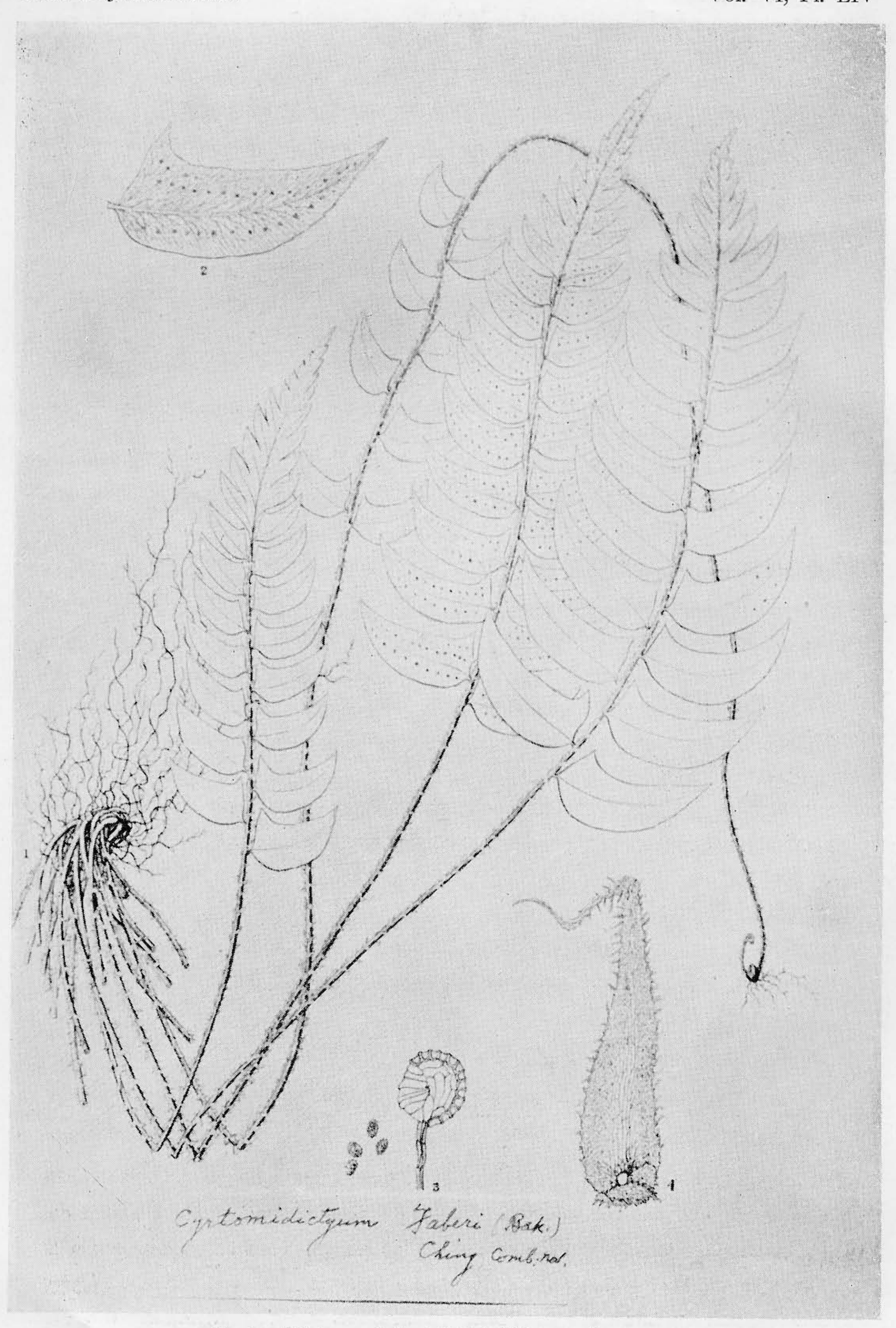

***Cyrtomidictyum conjunctum*** Ching, sp. nov.

1. 植物体全形 × ½； 2. 羽叶、表示叶脉和子囊群 × 1½；
3. 不育羽叶表示叶脉 × 1½； 4. 叶柄上的鳞片 × 15； 5. 叶背上的鳞片 × 15。



***Cyrtomidictyum lepidocaulon*** (Hook.) Ching

1. 植物体全形 × $\frac{1}{2}$； 2. 羽叶的一部，表示叶脉和子囊群 × 1$\frac{1}{2}$；
3. 子囊和孢子 × 50； 4. 叶柄上的鳞片 × 10； 5. 叶背上的鳞片 × 10。




***Cyrtomidictyum Faberi*** (Bak.) Ching, comb. nov.

1. 植物体全形 × ½;　　2. 羽叶、表示叶脉和子囊群 × 1;
3. 子囊和孢子 × 50;　　4. 根基中幼芽上的鳞片 × 10。